

# **Rockford Police Department: Resource Allocation and Deployment Interim Report**



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## **Rockford Police Department: Resource Allocation and Deployment**

### **Introduction**

Like almost every law enforcement agency, The Rockford Police Department (RPD) thinks a great deal about the effective and efficient deployment of resources. This is particularly critical for the uniformed services, where issues like police visibility and response time are key indicators of performance.

This report is the first of several that examine resource deployment in the Rockford Police Department. In this document we examine staffing for the patrol division. Subsequent reports will explore support unit staffing, and geographic deployment.

There are a number of different methods to conduct a police staffing analysis, so it is instructive to review some of the more popular methods. Among these methods are:

- Population-based rates
- Minimum staffing
- Workload/Performance staffing

For many years communities have relied on officers per population rates as a method to estimate the appropriate numbers of police officers for a community. This approach was driven, in part, by the FBI, who a number of years ago began suggesting optimal rates for given-sized communities. In other words, the FBI has suggested that a community with a population of 50,000 should have, as an example, a ratio of 1.5 officers per 1000 residents. These staffing benchmarks remain quite popular-they are often used by police executives to justify additional resources. While these population ratios are a commonly-used tool, they are, we believe, of limited value.

An examination of the population ratios from around the country show significant variation. First, the rates vary widely by region.

- Northeast 2.7 per 1000
- South 2.6
- Midwest 2.2
- West 1.7

Next we see that the size of the community affects the rates:

- All Cities 2.3 sworn per 1,000
- <10,000, 3.3 sworn per 1,000
- 25,000 -49,999 and 50,000 – 99,999 , 1.8 sworn 1,000
- >250,000 2.8 sworn per 1,000

Not only do these rates vary by community size, but there is tremendous variation within the categories. Examine, for example, the rates for large cities with the highest rates<sup>1</sup>.

- Washington DC 6.3
- Newark 5.4
- New York 5.1
- Baltimore 4.7
- Chicago 4.6
- Philadelphia 4.6
- Detroit 4.8
- St. Louis 4.3
- Cleveland 3.8
- Boston 3.8
- Atlanta 3.5
- New Orleans 3.4
- Milwaukee 3.6
- Buffalo 3.2
- Cincinnati 3.1

This list illustrates the inherent difficulties in using the population rate approach. First, we observe that the rate in Washington DC is nearly twice as high as cities like Buffalo and Cincinnati. Second, the list is notable because many large cities like Los Angeles, Oakland, and Denver have rates that are much lower, than any of these, so low that they do not appear on the list.

The principal problem with the population based approach is that it only addresses the *quantity* of police officers, not how they spend their time or the *quality* of their efforts. This list provides strong evidence that increasing the size of a police department will not necessarily make it better.

Another popular approach to police resource allocation is “minimum staffing”. In the minimum staffing approach, police departments define some minimum number of officers required to be on duty. If the number of officers on duty falls below that value, the agency must fill that vacancy, typically through using an off-duty officer paid on overtime.

There are two key justifications for minimum staffing levels. First, in many communities they believe that there is a minimum needed to ensure public safety. This is particularly common in small communities where there are relatively few demands for police service, but the community feels that there must be at least two officers on duty at all times. The second justification for minimum staffing levels is police officer safety. Police officers are increasingly insisting (oftentimes through collective bargaining) that a minimum number of officers be on duty.

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<sup>1</sup> FBI Uniform Crime Report, 2000.

These are both good reasons to maintain minimum staffing levels, but an agency adopting such an approach should understand the potential pitfalls.

First, minimum staffing levels are often only marginally related to demands for service. In fact, the minimum staffing level is typically higher than what would be warranted by the agency workload. Ironically, even though the minimum staffing is not workload based, it is not uncommon to hear police officers suggest that an increase in the agency's workload should warrant an increase in the minimum staffing level.

Second, the minimum staffing levels are sometimes set so high that it results in increasing demands for police overtime. It is not uncommon, for example, to see agencies that must "hire back" officers nearly every day because the number of officers assigned to the shifts is not enough to produce the minimum, given officer time off, vacations, sick leave, etc. Ironically, some agencies use a very narrow definition of available staffing. For example, they may hire back to fill a vacancy in patrol, even though there are a number of other officers on the street, including traffic, school resource, and supervisors.

Third, most police officers, given a choice, would prefer to have more officers on the street, and so for that reason, minimum staffing makes sense. However, it is important to acknowledge that increasing the minimum will not, in and of itself, improve the quality of agency performance, nor will it necessarily increase officer safety. In fact, when agencies hire back police officers to work extra shifts they are likely to be fatigued, and their presence may actually increase the risk of injury to themselves or others.

Finally, in some agencies the minimum staffing level may become, by default, the optimal staffing level. Agencies often use the minimum level as a method to decide, for example, whether an officer can take a benefit day off. Others build work schedules so as to ensure that the minimum level is on duty, rather than optimizing the available resources.

The final generally used approach to police staffing is workload/performance based. In this approach we estimate the number of police officers required by examining how officers spend their time. In other words, we base our determination of how many are needed, in large part, on what we want the officers to do.

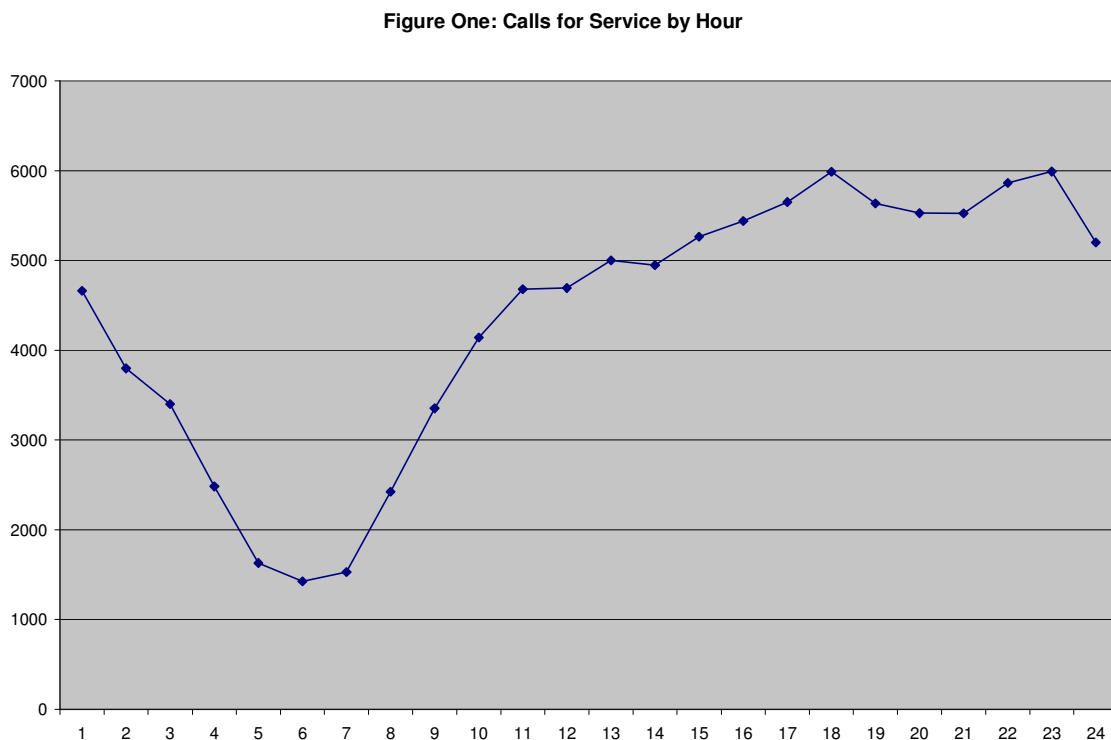
### **Staffing Analysis**

The principal component for this analysis is the citizen initiated call for service (CFS). A call for service describes those cases in which a citizen contacts the police (typically by phone) and a police officer(s) is dispatched to handle that call. This definition is very important in this type of analysis. Most computer-aided dispatch (CAD) systems record all types of incidents. For example, when a police officer initiates a traffic stop the dispatcher will typically make a CAD entry, and an incident number will be assigned. While this event will show up in a query of activities, it is not, by definition, a call for service.

Once we have determined the number of calls for service we can use that data to start building a model. In order to estimate staffing based calls for service we need to look at when those calls occur and how long they take.

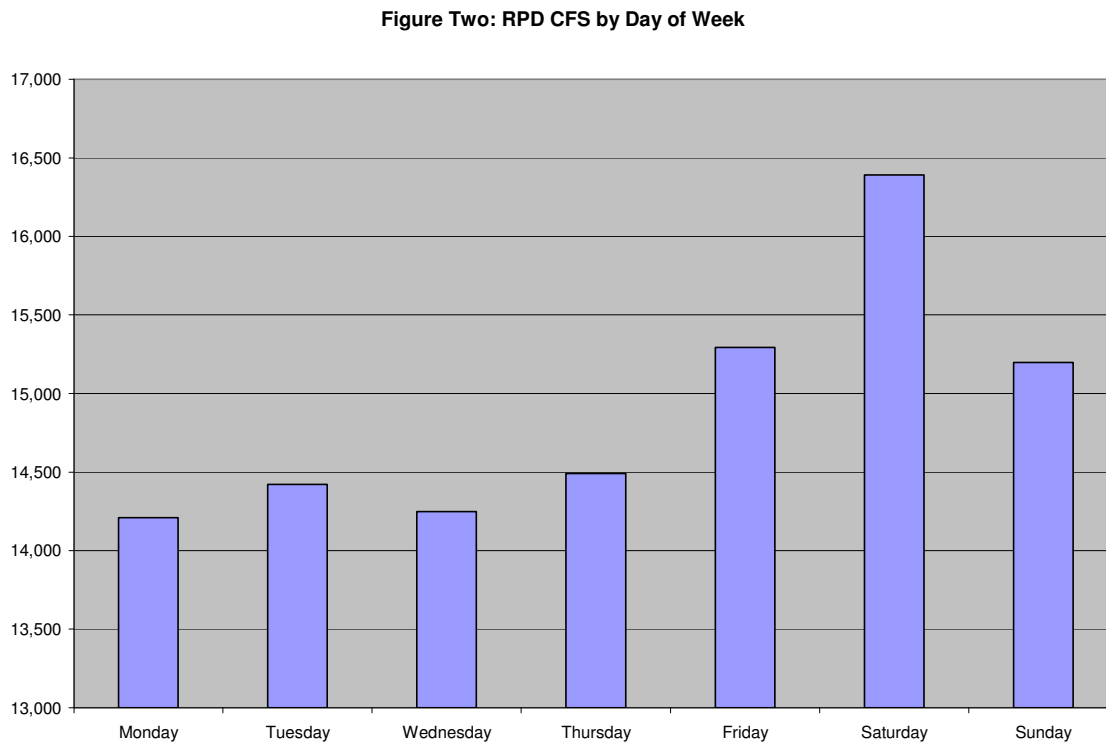
For the Rockford analysis we examined a one year period from July 1, 2007 to June 30, 2008. Choosing a period of this duration allows us to account for seasonal variation. For this time period we identified 104,251 cases in which a police officer was dispatched to a call. This equates to an average daily call volume of 286, or, on average, 12 calls per hour.

Figure One illustrates the distribution of these calls by hour of day.



The numbers along the vertical axis indicate the number of calls per service by hour. The numbers along the horizontal axis indicate the hours of the day, with “0” representing midnight. As we can see the peak demand for police services begins at about 1400 hours (2:00 PM) and ends around midnight.

Figure Two illustrates the distribution of calls by day of week.



This distribution is typical for most law enforcement agencies. Note the increase in demands on the weekends. In fact, the number of calls for service on Saturday is 15% higher than on Monday.

The following table illustrates the calls for service data used in the analysis. Our examination of calls for service data revealed that 2663 traffic accidents were investigated by officers outside of patrol. Thus we have removed them from the total.<sup>2</sup> Finally, we made an adjustment for calls that require a back-up officer. The RPD data system does not track the duration of time that back-up officers remain on calls, and thus it is difficult to accurately account for. The records system indicated that 49% of calls have a second unit assigned. We know that the second unit rarely stays for the duration of the call. In order to adjust for this data anomaly, we used an estimate that suggests that 25% of calls require a back-up unit and that they stay the entire time. This will nominally increase the number of calls for service by 25%. The last column indicates the numbers of calls for service used in our analysis.<sup>3</sup>

<sup>2</sup> We allocated these investigations by shift in proportion to the distribution of other calls.

<sup>3</sup> Staffing studies in Peoria and Cook County utilized 25% backup rates.

	Dispatched	Accidents	Dispatched -Accidents	25% added	CFS
<b>Night</b>	21353	663	20690	5172	<b>25862</b>
<b>Day</b>	37517	1000	36517	9129	<b>45646</b>
<b>Evening</b>	39730	1000	38730	9683	<b>48413</b>

We have divided the day into three eight hour shifts:

- Night Shift (Midnight to 8:00 AM)
- Day Shift ( 8:00 AM to 4:00 PM)
- Evening (4:00 PM to Midnight)

The next element is the time devoted to these calls. During our period of study the average travel time for all calls was eight minutes. The average time on scene was 32 minutes. Thus we used a total time consumed of 40 minutes, or .66 hours. Using this value we can calculate total time consumed on calls for service by shift. It is as follows:

Shift	Total Time Consumed in Hours
Night	17069
Day	30126
Evening	31956

The next step in the process is to estimate the number of officers required to handle these calls.<sup>4</sup> If an officer were to work eight hours per day, 365 days a year that would result in 2920 hours. If we divide the total time consumed by the number of hours worked we can see the number of officers required to handle calls for service by shift. It is illustrated below:

Shift	Total Time Consumed in Hours	Officers Required
Night	17069	<b>5.8</b>
Day	30126	<b>10.3</b>
Evening	31956	<b>10.9</b>

The column labeled “Officers Required” indicates the number of officers required to be on-duty if they handled calls for service the entire shift. Of course, officers do many things other than handle calls for service, including patrol, traffic enforcement, as well as administrative tasks like report writing and meals.

<sup>4</sup> At this point we will assume that officers work eight hour shifts. The ten-hour issue will be addressed later in the report.



So in order to compensate for these other activities we must build a staffing model that accounts for this time. In the following table we illustrate this approach. We provide two models of how to allocate time. The first, assumes that officers spend 50 percent of their time on calls for service and fifty percent on the other activities. In order to produce this estimate we multiply the number of officers required for calls for service times two. The second model assumes that officers will spend 1/3 of their time on calls for service, 1/3 on administrative activities, and 1/3 on officer initiated activities. In this case we multiply the CFS value times three. This analysis appears below:

Shift	Officers Required CFS	50% Obligated	33% Obligated
Night	5.8	11.6	17.4
Day	10.3	20.6	30.9
Evening	10.9	21.8	32.7

These values indicate the numbers of officers that must be on-duty to reach these specific performance levels. We now estimate the number of officers that need to be assigned to a shift in order to ensure that the appropriate number of officers is on duty. To do this we utilize the **shift relief factor (SRF)**.

The shift relief factor shows the relationship between the maximum number of days that an officer could work, and the number of days that they actually work. We obtained data from RPD for the same time period as our calls for service data. This data reflects average time off for police officers in the patrol division.

Category	Time off (hours)	Notes
Personal Time	7	
Vacation	116	
Time Coming	96	
Sick Leave	107	includes FMLA, Worker's Comp and Sick Leave
Training	64.5	All documented training minus roll call training and new recruit training.
Regular Days off	832	Eight Hour Shifts
<b>Total</b>	<b>1222.5</b>	

The formula for the shift relief factor is:

$$365 \times \text{shift length} / (365 \times \text{shift length} - \text{total time off})$$

In this case it looks like:

$$2920 / (2920 - 1222.5) \text{ or}$$

$$2920 / 1697.5 \text{ or } 1.7$$

This means that if one officer is required to be on duty 1.7 officers must be assigned to that shift. This is comparable to similar agencies. Madison, Wisconsin has a SRF of 1.9; Peoria, IL is 1.7

Using this relief factor and our alternative staffing requirements we can now estimate the number of officers required to be assigned to each shift.

Shift	Officers Required CFS	50% Obligated	X 1.7	33% Obligated	X 1.7
Night	5.8	11.6	<b>19.72</b>	17.4	<b>33.5</b>
Day	10.3	20.6	<b>35.02</b>	30.9	<b>52.5</b>
Evening	10.9	21.8	<b>37.06</b>	32.7	<b>55.6</b>
Total			<b>91.8</b>		<b>141.6</b>

Up until this point we have been working with a model based on eight hour shifts. Now we turn to the ten hour shift used by RPD. The key dilemma is that by staffing three 10 hour shifts, a department is actually providing 30 hours of policing each day instead of 24. If the additional six hours is well managed it can improve performance. But if it is not, it will be problematic. To put it simply, assuming that the number of personnel remains constant, the adoption of 10 hour shifts will necessitate a reduction in service so as to provide the six hour overlap.

The following chart (Figure three) illustrates the relationship between resources required and resources available. The light blue column illustrates the number of officers required to handle only calls for service by hour of the day. The dark blue column illustrates the number of officers required to meet the 50 percent obligated time performance standard. The green column illustrates the number of officers required to meet the 33 percent obligated time performance standard. Finally, the gray column illustrates the average number officers working according to RPD records.<sup>5</sup>

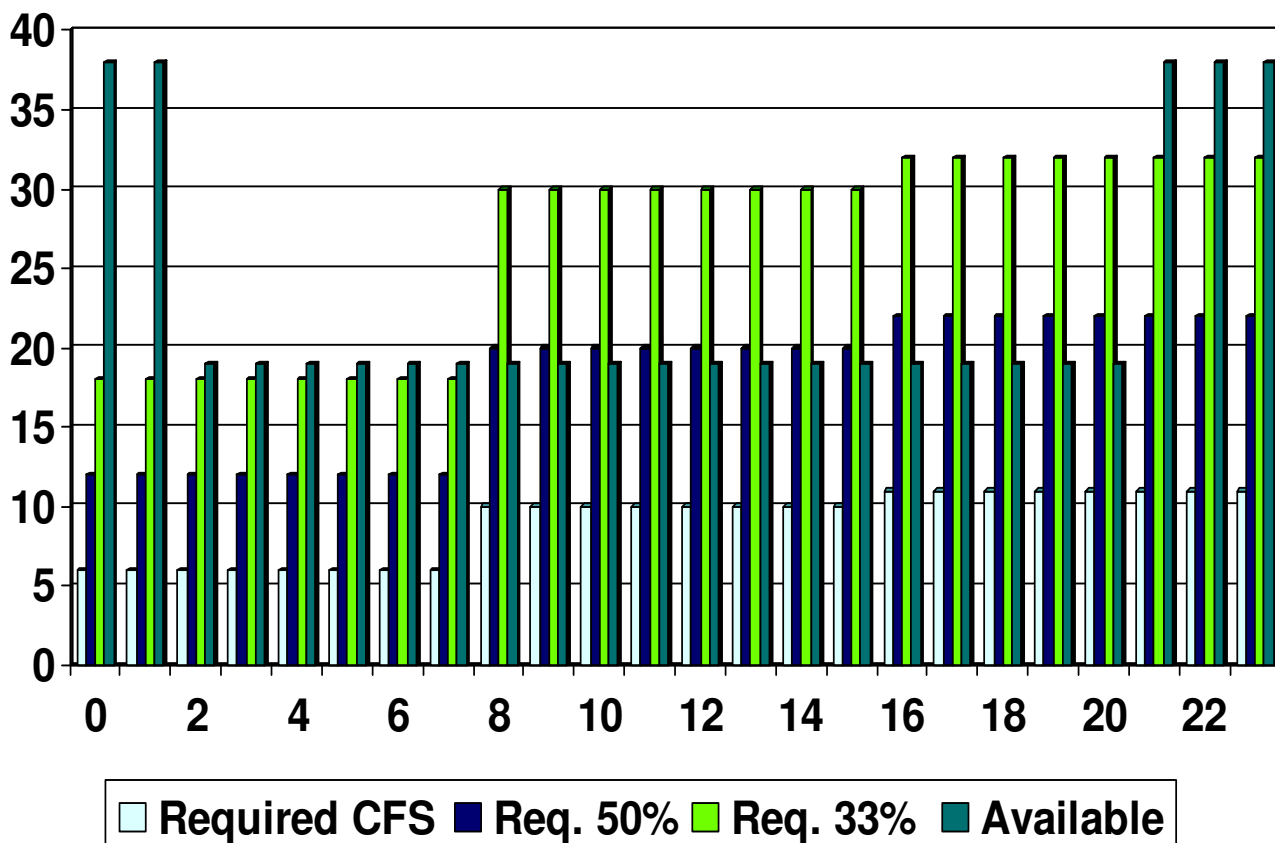
If we examine the figure we can observe several things. First, with the exception of the overlap hours (2100 to 0200)<sup>6</sup> the number of officers on the street is the same throughout the day. There are always enough officers on the street just to handle calls for service, but

<sup>5</sup> This number is derived from the Field Services Bureau staffing report.

<sup>6</sup> We did not include the morning and afternoon overlap times because they do little to contribute to staffing.

when we look at the 50 percent obligated time level a different picture emerges. We observe that from 0200 to 0800 we have more officers than are required. From 0800 until 1600 the staffing is about right, but from 1600 until 2100 available staffing falls slightly below the recommended level. When we examine the 33 percent obligated time measure we see that during the period of 0800 to 2100 there are insufficient resources. Finally we observe that staffing during the evening overlap is considerable more than is required for all performance levels. This suggests that the overlap is inefficient.

Figure Three: Required vs. Actual Staffing



Not only does a ten hour shift influence the distribution by hour of the day, it also affects the number of officers required. The biggest difference in a ten hour model is the shift relief factor. If we use the RPD data we can construct a modified relief factor.

Category	Time off (hours)	Notes
Personal Time	7	
Vacation	116	
Time Coming	96	
Sick Leave	107	includes FMLA, Worker's Comp and Sick Leave
Training	64.5	All documented training minus roll call training and new recruit training.
Regular Days off	1560	Ten Hour Shifts
<b>Total</b>	<b>1950.5</b>	

Notice that the total time off grew significantly because officers now have 30 hours off each seven day period instead of 16 as in eight hour shifts. We now recalculate the shift relief factor:

$$365 \times \text{shift length} / (365 \times \text{shift length} - \text{total time off})$$

$$365 \times 10 / (365 \times 10 - \text{total time off})$$

$$3650 / (3650 - 1950.5) \text{ or}$$

$$3650 / 1699.5 = \mathbf{2.1}$$

Using ten hour shifts will raise an agency's shift relief factor. Consider the following hypothetical. Let's say that an agency wanted a minimum staffing of 10 officers at all times. Using the RPD relief factors we

can see how this will work under differing scenarios. If the agency has to staff three eight hour shifts, we would simply multiply 10 (the minimum) times the relief factor of 1.7. Thus they will require 17 officers for each shift. If by contrast, we use the three 10 hour shifts with a relief factor of 2.1 we will have to assign 21 officers to each shift. Instead of 51 officers (3 x 17), the agency will need to employ 63 (3 x 21), a 23% increase. Of course by using three ten hour shifts we get an additional six hours of coverage. Given these differences the agency must examine whether the overlap is really worth it.

## **Work Schedule**

The second component of patrol resource analysis is the work schedule. The work schedule is critical because it is a tool to ensure that resources are aligned with organizational objectives.

Work schedules pose issues for the management of an organization and for its employees. Among the important management objectives are:

- Ease of design and administration
- Ability to match workload
- Ability to staff for special events
- Minimize overtime
- Employee safety and retention
- Compliance with law, employee contracts, and personnel rules
- Support communication
- Preserves unity of command and span of control.

Among employee work scheduling issues are:

- Workload equity
- Weekend time off
- Predictability
- Procedures for using benefit time off
- Fatigue and Stress
- Team integrity
- Schedule equity
- Compatibility with family and outside activities.

Police work schedules come in all shapes and sizes. Although each seems unique there is a methodology to apply so that we can compare work schedules. Among the important components of a work schedule are:

- Average work week
- Shift length
- Number of consecutive work days
- Weekend time off
- Staffing by day of week.
- Percentage of officers on duty each day.

In order to gather information about work schedule issues in the Rockford Police Department we conducted a survey. We distributed anonymous questionnaires to all police officers in the patrol division. We received 95 completed questionnaires. Participants were given five statements and asked to indicate the degree to which they agreed, disagreed, or had no opinion about the statement.

The first statement was: “I like the current patrol division work schedule”. Eighty-three percent of respondents either agreed, or strongly agreed with the statement, thus indicating strong support for the current work schedule.

The next statement asked respondents whether they preferred a work schedule with fixed days off (i.e. the same days off each week). Eighty-eight percent of respondents said they preferred rotating days off.

The third statement examined police overtime. We asked whether they would prefer to receive overtime pay or compensatory time off. Fifty-five percent of the officers said that they would prefer overtime pay, thirty percent preferred compensatory time off, and fifteen percent were neutral.

We asked whether “RPD should investigate a 12 hour work day for patrol”. Half of the officers were opposed, thirty-seven percent were in favor, and thirteen percent were neutral.

Finally, we looked at whether “supervisors should have the same work schedule as the officers under their direction. Sixty-eight percent agreed that they should, twenty-six were neutral.

Now that we know something about the police work scheduling issues in Rockford we can take a closer look at alternatives.

The Rockford Police Department uses a four-ten plan for the patrol division. That is, officers work the equivalent of four ten hour days each seven day period. The schedule is illustrated below.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	Off	Off	Off				
2		Off	Off	Off			
3			Off	Off	Off		
4				Off	Off	Off	Off
5					Off	Off	Off
6	Off					Off	Off
7	Off	Off					
<b>% On</b>	<b>57</b>	<b>57</b>	<b>57</b>	<b>57</b>	<b>57</b>	<b>57</b>	<b>57</b>

This diagram allows us to analyze the schedule critically. The duty cycle is 3Off-5On (X3), 4Off-4On (X2), 4Off-5On. Imagine that this schedule was being used for a team of seven officers. Each officer would start the cycle at the beginning of their respective week. Over the course of the forty-nine day cycle each officer is off twenty-one days.

The longest consecutive work period is 5 days. Because the shift length is 10 hours, each officer works an average work week of forty hours.

We also observe that during the duty cycle each officer has four full or partial weekends off<sup>7</sup>. In addition, officers have rotating days off. That is, each week their day off pattern is different. The table also illustrates the number of officers on and off duty each day. Assuming that the number of officers assigned is a multiple of seven, this schedule will result in 4 of 7 (or 8 of 14) officers on duty on every day. Thus, we know that the schedule produces equal staffing by day of the week, and that 57 percent of the officers in a work group are assigned to work each day. If we were to assign a number of officers to the group that was not a multiple of seven, it would result in different staffing by day of week.

Earlier in this report we examined how using ten hour shifts will increase an agency's shift relief factor and hourly allocation, now we will expand on that discussion in the context of work scheduling.

Consider an agency that works a shift with eight hour days, and each officer has two days off in each seven day period. In this schedule each officer or group of officers is assigned permanently to a day off group. This configuration is illustrated below:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1						Off	Off
2	Off	Off					
3		Off	Off				
4			Off	Off			
5				Off	Off		
6					Off	Off	
7	Off						Off
<b>% On</b>	<b>71</b>	<b>71</b>	<b>71</b>	<b>71</b>	<b>71</b>	<b>71</b>	<b>71</b>

Using the same approach as above we observe that the shift has unique properties:

- Fixed days off
- Three groups of officers have either a full or partial weekend day off
- Equal staffing by day of week
- Longest on duty cycle is five days.

Importantly we observe that on every day 71 percent of the officers are on duty. This is of course, considerably higher than the 4-10 plans. So it is important to examine the effect of ten hour shifts on performance.

<sup>7</sup> Saturday, Sunday or Saturday and Sunday

In the ten hour plans departments provide thirty hours of policing each day. For six hours there is an overlap of resources. In Rockford this overlap occurs between 0630 and 0700 hours, 1600 and 1630 hours, and between 2100 and 0200 hours. When 4-10 plans were introduced proponents argued that departments would not need additional resources to meet performance objectives. In theory, departments would staff the overlap by reducing staffing during 6 non-peak hours, thus the total number of officers would remain constant.

If an agency uses a workload based approach to staffing this theory holds true. In fact, one could argue that the model is very efficient. The problem occurs when agencies utilize minimum staffing; such is the case in Rockford. Let's say an agency has ten officers assigned to each shift and they work eight hour days, and that the agency has a minimum staffing of 7 each shift. We know that about 7 will be working each day in our 5-2 schedule. Now suppose the agency adopts a ten hour schedule with six hours of overlap. We know that we have to reduce staffing during six off-peak hours to cover those overlap times. However, in spite of this requirement, the agency decides to stick to its minimum staffing requirements. The result is that the additional overlap is not coming from the off-peak hours. In this example the agency simply overlaid the 10 hour configuration on top of the minimum staffing level. As a result, unless the department allocates more resources to patrol, it will result in a chronic understaffing. This understaffing will necessitate hiring off-duty officers to fill vacant spots.

There are, of course variants of the 5on-2off schedule. The following table, for example, illustrates the 4on -2 off schedule.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1					Off	Off	
2				Off	Off		
3			Off	Off			
4		Off	Off				
5	Off	Off					Off
6	Off					Off	Off
<b>% On duty</b>	<b>66%</b>	<b>66%</b>	<b>66%</b>	<b>66%</b>	<b>66%</b>	<b>66%</b>	<b>66%</b>

This schedule has a six week cycle and days off rotate each week. During the cycle each officer receives three full or partial weekends off. Two thirds of the officers work each day. This schedule requires that officers have rotating days off.

The interesting aspect of this schedule is that if the officer works an eight hour day it results in 37.33 hour work week. Normally this situation requires the officer to "pay back" that time. There are three possible variations possible.

If the shift length is eight hours, the officer would have to pay back one day every three weeks to achieve a forty hour work week. If the shift length were increased to 8 ¼ hours the average work week would be 38.5 hours, and the officer would have to provide 6



payback days every 33 weeks. If the shift length were increased to 8 ½ hours the average work week would increase to 39.67 hours, and officers would only be required to pay back 2 days every 51 weeks.

### Twelve Hour Shifts

One of the most interesting recent changes in police work scheduling has been the widespread adoption of the 12 hour shift. Hundreds of agencies have adopted this approach, and the number of implementations continues to increase. Evidence, both anecdotal, and more systematic suggests that this approach can be highly effective<sup>8</sup>.

The twelve hour schedule is relatively straightforward. It is a fourteen day duty cycle. The pattern consists of: 2 days on, 2days off, 3 days on 2 days off, 2 days on, 3 days off. This schedule results in a 42 hour average work week. Over the two week cycle officers would earn four additional hours, which could be paid in overtime, or provided as time off.

All officers are assigned to one of two groups. It is illustrated below.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
One			Off	Off			
Two	Off	Off			Off	Off	Off

As can be seen, officers have rotating days off during the duty cycle, but the pattern is repeated every two weeks. Thus, an officer could expect, for example, to have every other Monday and Tuesday off. Officers assigned to this pattern would have every other weekend off.

Twelve hour schedules are better for meeting workload requirements than ten hour shifts because the agency is proving 24, not 30 hours of service.

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<sup>8</sup> A Look at the 12-Hour Shift: The Lincoln Police Department Study. Captain Jon Sundermeier, Lincoln, Nebraska, Police Department. *The Police Chief*. March 2008.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
One (7)			Off	Off			
Two (7)	Off	Off			Off	Off	Off
On Duty	7	7	7	7	7	7	7
% On Duty	50	50	50	50	50	50	50

At first glance it looks like 12hour shifts actually reduce resource, but recall that the agency need only staff two shifts per day. Staffing 7 officers on 12 hour shifts is equivalent to staffing 10 eight hour officers.

Twelve hour shifts, while growing in popularity, do have several disadvantages including:

- Fewer work days per officer per year
  - More difficult to maintain communications
  - Officers engage in more outside activities
  - Officers are more willing to live farther from the community
  - The potential of more off-duty court time
  - More difficult to schedule training
- Greater fatigue/ lower productivity
- Uniform staffing by day of week and by shift.

There are a number of advantages to this approach:

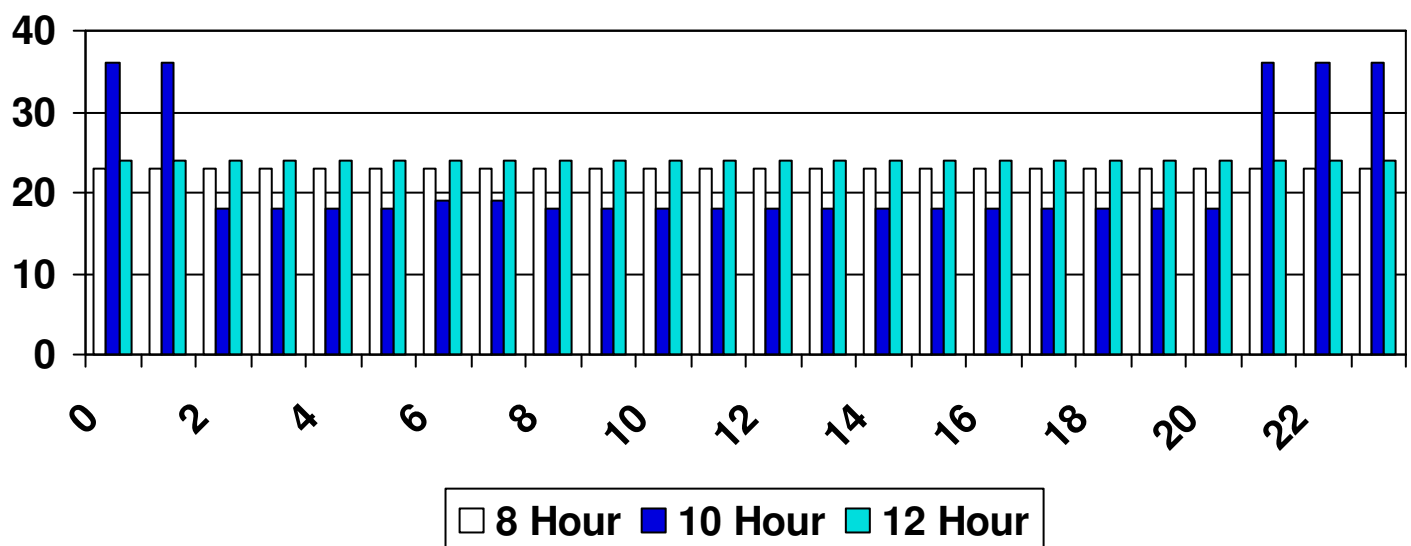
- Two shifts instead of three-easier to administer
- Fewer shift changes
- More days off per year
  - More time for outside activities
  - Fewer trips to and from work
- Less overtime
- Less sick leave
- Greater productivity
- Easier supervision
- Higher Morale
- Supervisors can easily be assigned to the same work group as their subordinates.

Agencies that adopt 12 hour work schedules are particularly concerned about fatigue. The evidence on this issue is mixed. On its' face a twelve hour shift seems very long and one

could easily predict an increase in accidents and injuries related to fatigue. However, the schedule does provide significant amounts of time off, and most agencies that adopted this approach have not experienced those anticipated increases. In fact, most agencies report that officers on 12 hour schedules use less sick time, and have lower levels of stress and illness.

The key to successful implementation is effective management of off duty time, particularly during the 12 hour break between consecutive days on duty. It is critical that officers get sufficient rest during their time off. For the department that means closely monitoring off-duty employment, court, and other obligations that may diminish the opportunity for sleep.<sup>9</sup>

**Figure Four: Staffing Levels for 8, 10 and 12 Hour Schedules**



Finally we illustrate the staffing effects of 8, 10 and 12 hour shifts in Figure four. For this example we built schedules based for a unit with 96 officers. The chart depicts the number of officers *assigned* to work by hour of the day.<sup>10</sup> Under the eight and twelve hour schedules either 23 or 24 officers will be assigned at all times. Under the ten hour configuration only 18 officers are assigned during non overlap hours. Since we know that not all officers assigned will actually show up (sick, time, vacation, etc.) we can see that

<sup>9</sup> Bryan Vila, *Tired Cops: The Importance of Managing Police Fatigue*, Washington, DC: Police Executive Research Forum, 2000.

<sup>10</sup> We assumed equal staffing by shift and we used the five hours of overlap currently in use in Rockford.

a ten hour schedule will likely result in the frequent use of hire-back to meet minimum staffing.

The following tables illustrate staffing levels for the RPD Patrol Division under a twelve hour configuration. Each shift has two squads. For these illustrations we assume that the two shifts are staffed equally.

The first table shows staffing levels per shift for a patrol division with 92 officers (46 officers per shift).

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Squad One</b>			Off	Off			
<b>Squad Two</b>	Off	Off			Off	Off	Off
<b>On Duty</b>	23	23	23	23	23	23	23

The second table is based on a patrol division with 140 officers (70 officers per shift).

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Squad One</b>			Off	Off			
<b>Squad Two</b>	Off	Off			Off	Off	Off
<b>On Duty</b>	35	35	35	35	35	35	35

## **Enhancing Patrol Operations**

When assessing the performance of the patrol division it is very important to consider the systems and personnel in place to support patrol operations. In this report we examine two of these activities: communications and specialized patrol units.

### Communications

RPD communications are provided by the 911 Division of the Rockford Fire Department. The 911 Division is staffed by a Division Administrator, Training Supervisor, Technical Services Coordinator, MSAG (master street addressing guide) Technician, four Shift Supervisors, four Assistant Shift Supervisors, forty-one Telecommunicators and a Secretary.

This unit operates in fire department headquarters. All of the members of the division are fire department employees, however, Telecommunicators do either police dispatching, or fire/ems dispatching. The police Telecommunicators operate under a separate collective bargaining agreement.

Consolidated public safety communication center are becoming more common. They make great sense as a way to reduce costs and improve performance. Nonetheless, it is important to understand that using this approach to dispatching can be problematic. There are two critical issues.

First, it is often the case that police agencies that must work with a consolidated dispatch feel that they do not have sufficient authority to ensure high performance. That is, they argue that since the dispatch center is not part of their organization, and its employees do not work for the police department, there are limited opportunities for control. At the same time, the people that run the dispatch center feel that the ultimate responsibility for managing police calls for service lies with the police department. As a result of these circumstances we often find that many important decisions about public safety communications are made in a vacuum.

The Rockford 911 division struggles under similar constraints. First, it is clear to us that although this is consolidated dispatch center, its focus is really on the fire/ems side. When we asked about issues related to the dispatch of police calls we were repeatedly told, "those are police department calls," suggesting that it was the police department's responsibility to manage them. By contrast, when we asked about fire calls, the answers were always in terms of, "we do this". This is not to say that the division does not pay adequate attention to police calls for service. Rather, the organizational structure creates a potentially troublesome environment.

It is also clear that RPD can do more to manage the activities of the communications center. The 911 administrator has encouraged the department to assign supervisors to the center, particularly during peak demand times.

Many of these issues are related to use of technology. RPD uses computer aided dispatch (CAD) system, and each officer has a mobile digital terminal in their car. Unfortunately, these systems are underutilized. In a CAD system each call is recorded and assigned to the appropriate unit. When units are not available the calls are held in queue. Using this system a dispatcher can see all of the units working, what they are doing, and how many and what types of calls are in queue. At present, the only other person that can see all of this information is the watch commander.

Ideally this information should be readily available to all officers and supervisors on the street. This would permit field supervisors to make timely, well informed decisions about resource allocation. It would also permit officers to see the calls that are pending in their area. This would help them plan their discretionary activities, and in some cases they may be able to quickly expedite some calls. Imagine a case in which an officer was dispatched to a call and he knew that he could easily handle pending another call while in route. Right now, the officer would be dispatched to the first call and when they finish they are dispatched to the second. This process could be significantly enhanced by adding automated vehicle locator technology to police vehicles.

Another important communications issue is related to information technology. At the present time each call received at the center is coded based on the nature of the offense. That “nature” code then defaults to a dispatch priority code. For example, an armed robbery would receive a nature code, and then be automatically assigned a priority code.

In theory this system works, but in practice there is a big problem. The problem occurs because regardless of whether the robbery took place five minutes ago or five days ago, it receives the same nature code, and thus the same priority code. So while the dispatcher knows that the five day old offense does not require a rapid response, the CAD system seems to suggest it does. Moreover, when someone gathers response time data about high priority calls, it includes the non-emergency calls. As a result response time data is terribly skewed and not a good indicator of police performance. The solution to this problem is straightforward. The dispatcher should decide on the priority of the call based on the facts and circumstances, not on the crime classification.

### Specialized Patrol Units

The Rockford Police Department maintains several specialized patrol units. The units and their staffing are illustrated below.

Unit	Supervisors	Police Officers
Community Services Unit	1 Sgt.	6
M3Team Unit #1	1 Sgt.	8
M3Team Unit #2	1 Sgt.	8
M3Team Unit #3	1 Sgt.	6
CRU		2
School Resource Unit	1 Sgt.	9
Traffic	1Sgt.	15 Investigators
<b>Total</b>	<b>6 Sgt</b>	<b>54</b>

These specialized units perform a wide variety of tasks including problem-solving, bicycle patrol, gang suppression, traffic enforcement, etc. They use a mix of delivery systems. Some units are staffed by two officers, some use unmarked vehicles, and some others do not wear a traditional police uniform. With the exception of the traffic units they are not recommended for calls for service in the CAD system. Traffic officers are only recommended for traffic relayed calls.

The utilization of traffic specialists seems unusual. The department has invested significant amounts of time and money in an effort to train traffic accident reconstructionists. These individuals can be critical in the event of a serious crash. Ironically, these officers spend a considerable amount of their time investigating relatively minor property damage crashes. While this activity will help to reduce this burden from patrol, it is not the best use of their time. They could probably be of more value by using available time for enforcement at high accident locations, and as part of a crime control strategy.<sup>11</sup> The Albuquerque Police Department uses Police Service Aides, to investigate the brunt of minor traffic accidents in the city. These individuals earn approximately \$22,000 annually.<sup>12</sup>

### Summary and Recommendations

This report is the first in a series of studies that will examine police resource allocation and deployment in Rockford. In interpreting these data one should consider several things.

- This analysis is based on averages. That is, we look at typical values for a year, a week, a day and a shift. There may be considerable variation. In fact, when we look at a shift we assume that calls are distributed equally over the eight hours. We know, particularly on the midnight shift, that the assumption is wrong.
- When using a performance based system it is important to understand its implications. If for example, if we have too few officers to meet the 50%

<sup>11</sup> Alexander Weiss and Kenneth Morckel," Strategic and Tactical Approaches to Traffic Safety". The Police Chief, vol. 74, no. 7, July 2007.

<sup>12</sup> <http://www.apdonline.com/requirements/aide.html>

unobligated time threshold, it means *simply that there will be less unobligated time*. It does not suggest that the agency will be unable to respond to emergency calls.

- We have looked at the relationship between calls for service and response by patrol division officers. This is not a complete picture. For example, on some occasions calls or backups are handled by supervisors, tactical officers, or traffic officers, but these additional resources do not appear in the analysis. This will result in an overestimate of patrol demands.
- On occasion, events take place that significantly tax police resources. A major accident or serious crime can have enormous consequences. Unfortunately, it is not feasible to staff in anticipation of these rare events.

Given these caveats we can still make several recommendations regarding RPD staff.

1. **RPD should closely examine its deployment of uniformed services.** Like many police organizations, RPD places great emphasis on the use of specialized units. In many cases these units perform very well, and they do a great deal to support the mission of the department. However, the degree of specialization in Rockford is problematic. Of the three hundred sworn officers in the department, only about one third are in the patrol division. Moreover, the nature of the deployment of special units is less than effective. When we look at staffing requirements we can see the impact of this approach. At the 50 percent obligated time performance level, RPD needs to assign 92 officers to the patrol division (the current level) if, however, they want to staff at the 33 percent obligated time level, they need to assign 142 officers. The difference is about the same number of officers that are assigned to special units. So one can argue that by assigning the proactive work to the special units, it is reasonable to keep patrol at the 50% level. We believe that if the special units are maintained they can be used more effectively. First, all uniformed services officers should be in the calls for service radio queue. That is, they should be available for calls for service when required. If these officers are on a special assignment that necessitates an exception, then they can be taken out of service. However, since much of what they do consists of patrol-like activities, they can and should also answer calls. Second, it is hard to understand why officers in these units do not work in uniform and in marked cars. Almost anyone observing an M-3 officer on patrol would recognize their vehicle as a police vehicle, so why not let them use a regular marked vehicle. This would improve the visibility of the department and increase citizen perceptions of safety. Finally, there is little or no justification for providing additional compensation for traffic investigators. While this job does require a unique set of skills these skills are no more sophisticated than those required of patrol officers. To summarize, RPD should re-emphasize the use of the patrol generalist. With effective management, such an approach will significantly improve performance.
2. **The RPD should replace the ten hour shift with either an eight or twelve hour shift schedule.** The 4-10 schedules currently in use result in extra costs and do not conform well to the workload. The department would be better served with



an eight or twelve hour plan. If however, the department chooses to retain the ten hour shift we recommend adjusting the start times. The current starting shift times are:

- 0630 to 1630
- 1600 to 0200
- 2030 to 0630

While this configuration is helpful during the late evening, it does little to help with the peak demand that starts at 1400 hours. This configuration results in calls being held for the afternoon shift, and/or calls being covered on overtime by day shift officers. It may be beneficial to push back the start time for the afternoon shift. Another approach is to stagger start times. That is, suppose a shift starts at 2030 hours, Rather than everyone coming in at that time, an alternative would be to bring one half of the officers in an hour earlier. If this staggered approach is managed carefully it will greatly reduce the backlog of calls that occur at shift change.

3. **RPD should modify its approach to minimum staffing.** The Rockford Police Department is straining under the burden of a minimum staffing level. Nearly every day, the department must “hire back” officers on overtime to fill positions mandated by minimum staffing levels. Most agencies would be hard pressed to eliminate minimum staffing but in the case of RPD there are two approaches that might help to make it more manageable. First, RPD does not need the same minimum number of officers at midnight that it does at 0400. It does not need the same number at 0800 that it needs at 1500. Thus, the department should have lower minimum staffing levels during off-peak hours (0300 to 1100). Second, the department should take a more critical look at what the term *minimum staffing level* means. Right now the minimum level is based on staffing for each patrol shift. This approach ignores the many other uniformed officers on the street, so if the justification for minimum staffing is officer safety it seems odd that these additional officers are excluded. In addition, when enlisting hire-backs the department should look at the overlap staffing. Suppose for example, that the night shift is two officers below the minimum, but the afternoon shift is two over. That means that during the hours of 2030 to 0200 the department has met the minimum. In spite of this, the night shift will hire back the additional officers.
4. **The RPD should take a more active role in the 911 Division’s Operation.** The way in which calls for service are received, managed and dispatched is a critical component of effective policing. In many ways, the community’s assessment of police performance is strongly influenced by the quality of the call center. The department needs to ensure that the communication center runs effectively, irrespective of where the center lies on an organization chart.

